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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,854	12/05/2003	Junghoon Lee	8102 / NU 23073	8310

22922 7590 10/31/2005

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EXAMINER	
GITOMER, RALPH J	

ART UNIT	PAPER NUMBER
1655	

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/729,854	LEE ET AL.	
	Examiner	Art Unit	
	Ralph Gitomer	1655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *1-8 and 16-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Applicant's election without traverse of Group II, claims 9-15, in the reply filed on 10/3/05 is acknowledged.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9, 10, 14 are rejected under 35 U.S.C. 102(a) as being anticipated by each of Gao and Davis.

Gao (Synthetic Metals) entitled "Glucose Sensors Based on Glucose Oxidase Containing Polypyrrole Aligned Carbon Nanotube Coaxial Nanowire Electrodes" teaches on page 1393, glucose sensors with glucose oxidase made from carbon nanotubes. On page 1394 oxidation of hydrogen peroxide on the electrodes was examined and volts generated shown in the voltammograms. Fig. 3 shows glucose concentrations in mM.

Davis (Chem Eur J) entitled "Chemical and Biochemical Sensing with Modified Single Walled Carbon Nanotubes" teaches on page 3737 in Fig 7B, a voltammetric response of a SWNT with glucose oxidase coating in the presence of glucose substrate.

Claims 9, 10, 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Azamian.

Azamian (JACS) entitled "Bioelectrochemical Single Walled Carbon Nanotubes" teaches on page 12665 glucose oxidase immobilized on SWCN and in Fig. 4 the voltammetric result of determining 50 mM glucose.

Each of the features of the claims are taught by each of the above references for the same function as claimed.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11-13, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over each of Gao, Davis and Azamian.

Claim 11 differs from the references in that it recites the medium has a volume less than about 10 microliters. Claim 12 differs from the references in that it specifies the medium comprises a bodily fluid. Claim 13 differs from the references in that it recites the source of the glucose oxidase is bacteria. Claim 15 differs from the above references in that it specifies glucose is oxidized to gluconic acid.

Regarding claim 11, it would have been obvious to one of ordinary skill in this art at the time the invention was made to select any desired volume of sample or medium in the method taught by each of the above references because nanotubes are small and a small volume would be sufficient to wet the tube. The nanotubes taught by each of the references would be wet by less than 10 microliters. And in general, the size of a device does lend patentability.

Regarding claim 12, it would have been obvious to one of ordinary skill in this art at the time the invention was made to determine a bodily fluid sample by the method taught by each of the above references because the references teach glucose sensors and glucose is found in bodily fluids and well known to be determined in bodily fluids.

Regarding claim 13, it would have been obvious to one of ordinary skill in this art at the time the invention was made to select any known source of glucose oxidase, such as bacterial, in the method taught by each of the above references because employing a known source for its known function with the expected result would have

been obvious. Most commercially available glucose oxidase is presently obtained from bacteria.

Regarding claim 15, it would have been obvious to one of ordinary skill in this art at the time the invention was made to oxidize glucose to gluconic acid in the method taught by each of the above references because the references teach reacting glucose with glucose oxidase and the product of such a reaction is well known in this art, gluconic acid. Such a reaction product is inherent in the method taught by the references which each teach hydrogen peroxide is produced and determined in some fashion. The other product produced would be gluconic acid.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each of the following applies in all occurrences.

In claim 9, "introducing" is not understood in context. More standard method steps are contacting, determining, correlating. In claim 9 last line, what electrical response is monitored is not set forth. Claim 9 is directed to sensing glucose, which is not understood, and the claim lacks any steps to perform that function. In claim 11 and 12, "said medium" lacks antecedent basis.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pisharody (US 2005/0130296 A1) teaches nanotube sensors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ralph Gitomer whose telephone number is (571) 272-0916. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on (571) 272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ralph Gitomer
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Art Unit 1655

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GROUP 1200